

NUCLEAR PACKING EFFICIENCY**ABSTRACT OF THE DISCLOSURE**

Methods and devices for determining the nuclear packing efficiency (NPE) of a cell nucleus and other biological particles. An NPE can be determined by correlating at least one biochemical component, such as DNA content, to nuclear volume using a variety of mathematical techniques. Flow cytometry is particularly useful for measuring nuclear volume in terms of the electronic nuclear volume (ENV). The NPE can then be used to characterize individual cells and cell populations in terms of species and tissue source, sexing, stage of the cell division cycle, differentiation and apoptosis, as well as differentiating among benign, malignant and metastatic states to diagnose cancer.